

Contact:  
Shannon McCormick  
O: 614.932.9950 / M: 614.477.2719  
[shannon@mediasourcetv.com](mailto:shannon@mediasourcetv.com)  
Alayna Curry  
321.843.1343  
[Alayna.Curry@orlandohealth.com](mailto:Alayna.Curry@orlandohealth.com)

## ORLANDO HEALTH SURGEONS USE 3D-PRINTED FETUS MODELS TO PREPARE FOR IN-UTERO PROCEDURE

*New modeling technology allows surgeons to visualize complicated pre-delivery procedure*

(ORLANDO, Florida) – A state-of-the-art in-utero procedure allows surgeons to correct a birth defect on developing babies inside the womb. But operating on a mother and her unborn child at the same time can be challenging and unpredictable. To give their world-class surgeons even more information ahead of surgery, [Orlando Health Winnie Palmer Hospital for Women & Babies](#) is using MRI and ultrasound imaging along with 3D-printing technology to create a first-of-its-kind detailed model that allows surgeons to plan procedures ahead of time, identifying potential obstacles and reducing the risks of surgery.

The models are currently being used to plan for an in-utero surgery that repairs spina bifida, a birth defect that occurs when the spinal cord fails to close normally during development. The condition can cause a lifetime of neurological disabilities, including an inability to walk.

“The 3D reconstruction of the fetus can really educate the surgeon on the real-life shape, size and location of the spinal lesion, as well as prepare the surgeon to have the appropriate equipment ready to treat this condition surgically,” said [Samer Elbabaa, MD](#), medical director of pediatric neurosurgery at Orlando Health Arnold Palmer Hospital for Children. “It’s a level of detail that we are not able to see in traditional imaging, but that is extremely valuable in these cases where we cannot actually see the defect ahead of surgery.”

To create the models, Orlando Health works with the expert 3D printers at Digital Anatomy Simulations for Healthcare, LLC (DASH) who developed the technology. While many have seen crude, single-colored items that have been 3D printed, DASH has taken the process to the next level, developing technology to enhance MRI and ultrasound images taken throughout the pregnancy to reconstruct accurate curves and edges. They are then able to print a high-resolution model with multiple colors and materials, allowing surgeons to see details such as skeletal structure, nerve and vascular anatomy and fluid sacs in the spine and brain caused by spina bifida.

The models are currently being used in the hospital’s open fetal surgery program, which has performed 25 procedures since it began in 2018. Orlando Health is one of only 12 facilities in the U.S., and the only one in Florida, that is able to perform this kind of surgery.

“The fetal models not only help surgeons plan for things like where to make an incision and how to repair the defect, but also helps reduce the duration of the surgery to limit the developing baby’s

exposure,” said DASH President and CEO Jack Stubbs. “We are able to create models that are extremely realistic by using a stack of two-dimensional images taken throughout the pregnancy and enhancing them to reconstruct a better visualization of what the fetus truly looks like.”

The 3D-printed models are giving surgeons a clearer picture for what to expect during a fetal surgery and also allowing surgeons to better explain the baby’s condition to parents and show them how it will be treated. For first-time parents Jared and Jocelyn Rodriguez, it made them more confident about moving forward with surgery.

“At first, we just thought it was a model showing the same kind of condition that our baby was diagnosed with, but then Dr. Elbabaa told us that it was made using the 20-week MRI of our daughter,” Jared Rodriguez said. “We could see the brain and the spine and I looked down at it and thought, ‘I’m holding my daughter right now? That’s pretty awesome.’”

The Rodriguezes say although they are prepared for the challenges their daughter may face, they’re glad this technological development is helping to give her a healthier future.

“Every appointment we go to, we just keep getting more good news and she’s already showing how strong she is,” Jocelyn Rodriguez said. “We know that this surgery will give her the best shot at a normal lifestyle and we’re excited to see the positive results as she grows.”

Surgeons are seeing successful results from fetal surgery for spina bifida. Most babies who undergo the procedure experience significantly fewer health concerns and better functionality than those who receive surgery after they’re born, with some of the first patients now learning to walk on their own. Experts hope to expand the program to model other types of birth defects in utero that may be treated through fetal surgery in the future.

**B-ROLL, SOUND BITES, WEB ELEMENTS & HI-RES STILL PHOTOS** - Including HD video available for free/unrestricted use by the news media: <https://bit.ly/3eGgNEF>

*Courtesy: Orlando Health*

For assistance in downloading, or if you have any questions, contact: [shannon@mediasourcetv.com](mailto:shannon@mediasourcetv.com) or call: 614.932.9950 or 614.477.2719.

#### **ABOUT ORLANDO HEALTH**

Orlando Health, headquartered in Orlando, Florida, is a not-for-profit healthcare organization with \$7.1 billion of assets under management that serves the southeastern United States.

Founded more than 100 years ago, the healthcare system is recognized around the world for its pediatric and adult Level One Trauma program as well as the only state-accredited Level Two Adult Trauma Center in Pinellas County. It is the home of the nation’s largest neonatal intensive care unit under one roof, the only system in the southeast to offer open fetal surgery to repair the most severe forms of spina bifida, the site of an Olympic athlete training facility and operator of one of the largest and highest performing clinically integrated networks in the region. Orlando Health is a statutory teaching system that pioneers life-changing medical research. The 3,200-bed system includes 15 wholly-owned hospitals and emergency departments; rehabilitation services, cancer and heart institutes, imaging and laboratory services, wound care centers, physician offices for adults and pediatrics, skilled nursing facilities, an in-patient behavioral health facility, home healthcare services in partnership

with LHC Group, and urgent care centers in partnership with CareSpot Urgent Care. Nearly 4,200 physicians, representing more than 80 medical specialties and subspecialties have privileges across the Orlando Health system, which employs nearly 22,000 team members. In FY20, Orlando Health served nearly 150,000 inpatients and nearly 3.1 million outpatients. During that same time period, Orlando Health provided approximately \$760 million in total value to the communities it serves in the form of charity care, community benefit programs and services, community building activities and more. Additional information can be found at <http://www.orlandohealth.com>, or follow us on LinkedIn, Facebook, Instagram and Twitter @orlandohealth.

**ORLANDO HEALTH WINNIE PALMER HOSPITAL for WOMEN & BABIES**

Orlando Health Winnie Palmer Hospital for Women & Babies is a 350-bed facility dedicated exclusively to the needs of women and babies. The hospital includes comprehensive fetal diagnostics and labor and delivery services, a regional center for neonatal intensive care, maternal intensive care and women's services. Annually, more than 14,000 babies are expected to be born at Winnie Palmer Hospital, making it the busiest labor and delivery unit in the state of Florida. The hospital is also home to the state's only in-utero surgery program to repair Spina bifida defects. To learn more, visit [www.winniepalmerhospital.com](http://www.winniepalmerhospital.com).